

CLAIMS

1 1. An apparatus for transferring data packets comprising:
2 a first node including a first end of a first channel and a first end of a
3 second channel;
4 a second node including a second end of a first channel and a
5 second end of a second channel;
6 a physical connection joining said first node and said second node
7 through which signals of both said first channel and said second channel are
8 carried;
9 a first controller connected to said first end of said first channel and a
10 second controller connected to a first end of said second channel, said first
11 controller and said second controller being in communication and controlling
12 interleaving of data through said physical connection.

1 2. The apparatus according to claim 1, further comprising a third
2 controller connected to the second end of the first channel and a fourth controller
3 connected to the second end of the second channel, said third and fourth
4 controllers being in communication with each other.

1 3. The apparatus according to claim 2, said first controller and said third
2 controller being in communication and said second controller and said fourth
3 controller being in communication.

1 4. The apparatus according to claim 1, said second node further
2 comprising a queue for receiving data packets from said second end of said first
3 channel and said second end of said second channel and for delivering said
4 packets to a processor bus.

1 5. The apparatus according to claim 4, wherein said processor bus
2 carries data according to a different type of resource sharing paradigm than said
3 physical connection.

1 6. The apparatus according to claim 1, wherein said first node and said
2 second node are connected by a second physical connection which carries both a
3 third channel and a fourth channel.

1 7. A method for transferring data, comprising:
2 connecting a first node and a second node with a physical
3 connection;
4 connecting one end of said physical connection to one end of at least
5 two channels and connecting the opposite end of said physical connection to the
6 other end of said at least two channels;
7 interleaving flits from said two channels along the physical
8 connection.

1 8. The method according to claim 7, further comprising reforming said
2 flits into packets at the other end of said channels.

1 9. The method according to claim 8, further comprising storing said
2 reformed packets in queues for transfer to a processor bus.

106250" 9E146860
1 10. The method according to claim 9, wherein said processor bus
2 transfers data in a different type of resource sharing paradigm than said physical
3 connection.

1 11. The method according to claim 7, wherein said flits are interleaved
2 when there is no valid data available in one channel, one channel or is receiving
3 backpressure from a receiver.

1 12. The method according to claim 7, wherein more than two channels
2 are connected to said physical connection.

1 13. A system for transferring data packets comprising:
2 a first node;
3 a second node;
4 at least one physical connection connecting said first node to said

5 second node;
6 a processor bus connected to said second node;
7 a first data channel and a second data channel each having a first
8 end in said first node and a second end in said second node, and both channels
9 being carried by said physical connection;
10 said channels carrying data packets divided into flits, with flits from
11 both channels being interleaved in said physical connection without bubbles.

1 14. The system according to claim 13, wherein said flits are reformed into
2 packets in said second node for transfer to said processor bus.

1 15. The system according to claim 14, wherein data is transferred from
2 said first node to said second node with one type of resource sharing paradigm
3 and transferred from said second node to said processor bus with a second type of
4 resource sharing paradigm.

1 16. The system according to claim 15, wherein said second node includes
2 queues for holding said reformed packets.